

What is claimed is:

1. An automatic pallet inspection cell, comprising:
a first multi axis robot arm which terminates in a pallet gripper,
an automated inspection station which compiles a three dimensional data map of a pallet surface;
a processor for interpreting the map and producing a recipe for the robot; and
one or more stations for conducting pallet repair operations that are specified by the recipe.
2. The cell of claim 1, wherein:
one station is a board removal station, further comprising a band saw which is adapted to separate a nailed board from a pallet to which the board is attached.
3. The cell of claim 2, wherein:
the board removal station further comprises a board pry device for removing boards that the saw can not.
4. The cell of claim 2, further comprising:
a lead board adjustment device.
5. The cell of claim 2, further comprising:
a board replacement device.
6. The cell of claim 1, further comprising:
a second multi axis robot arm which cooperates with the first multi axis robot arm so that a pallet is handled by both robot arms as it passes through the cell.
7. The cell of claim 6, wherein:
one robot arm terminates in an external pallet gripper and the other robot arm terminates in an internal pallet gripper.

8. A pallet gripper, comprising:

a rigid body having two tines,
each tine having an exterior face,
actuators positioned along each face, the actuators adapted to extend so as to contact, when actuated, an internal face of a bearer.

9. The pallet gripper of claim 8, wherein:

the tines have top and bottom surfaces from which may extend pairs of upper and lower actuators for gripping the interior surfaces of the pallet.

10. A pallet gripper comprising:

a frame having a transverse base;
the base supporting a pair of parallel arms within which a pallet fits,
the arms terminating in compression devices which can compress a pallet toward the base.

11. A method of automated pallet repair, comprising the steps of:

using a scanning device to create a map of a pallet;
creating a recipe of repair operations from the map;
gripping a pallet and transporting the gripped pallet to one or more repair stations in accordance with the recipe.

12. The method of claim 11, wherein:

the scanning device comprises a laser beam which is projected onto the pallet and providing three-dimensional data map used for detecting gaps and protrusions;
the three dimensional data being filtered into a two dimensional image of on/off values by using a dynamically created height value, corresponding to a reference plane or set threshold offset above the bearer or connector board surface.

13. The method of claim 12, wherein:

the three dimensional data is be filtered Sobel or Gaussian filters to provide locations of protrusions, cracks and other deviations in the pallet element surfaces.

14. A method for levelling a pallet prior to board removal by a band saw, comprising the steps of:

locating a pallet adjacent to a blade of the band saw;

rolling the pallet until an edge of the pallet contacts the blade and recording a first roll angle;

rolling the pallet in an opposite direction of roll until a second edge of the pallet contacts the blade and recording a second roll angle;

taking an average of the first and second roll angles, then

using the average to position the pallet relative to the blade.

15. The method of claim 14, where:

the locating and rolling of the pallet is done with a robot arm.

16. The method of claim 14, wherein:

proximity sensors measuring the blade position are used to detect pallet contact with the blade.